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**UTILITY  
PATENT APPLICATION  
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. BDE-001CN (431/6)

First Named Inventor Mundy

Title A System for Aggregating Information From  
Enterprises Offering Items for Exchange Over A  
Communication Network**APPLICATION ELEMENTS**ADDRESS TO: **Box Patent Application**  
**Assistant Commissioner for Patents**  
**Washington, D.C. 20231**1. ☐ Fee Transmittal Form2. ☒ Specification and Drawings [Total Pages 57]

- Written Description - (35 pages)

- Claims - (8 pages)

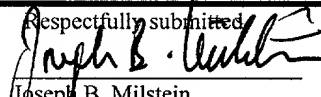
- Abstract - (1 page)

- Sheets of Drawings - (13 sheets)

☐ Formal☒ Informal3. ☐ Oath or Declaration [Total Pages ]a. ☐ Newly executed (original)b. ☐ Copy from a prior application (37 CFR  
1.63(d))

(for continuation/divisional with Box 17 completed)

[Note Box 4 below]

4. ☐ Incorporation by Reference (usable if Box 3b is checked)The entire Disclosure of the prior application, from  
which a copy of the oath or declaration is supplied  
under Box 3b, is considered as being part of the  
disclosure of the accompanying application and is  
hereby incorporated by reference therein.5. ☐ Microfiche Computer Program (Appendix)6. ☐ Nucleotide and/or Amino Acid Sequence Submission☐ Computer Readable Copy☐ Paper Copy (identical to computer copy)☐ Statement verifying identity of above copies**ACCOMPANYING APPLICATION PARTS**7. ☐ 37 CFR 3.73(b) Statement (when there is an assignee)☐ Power of Attorney8. ☐ English Translation Document (if applicable)9. ☐ Information Disclosure Statement (IDS)/PTO-1449☐ Copies of IDS Citations10. ☐ Preliminary Amendment☐ Drawings [Total Sheets ]☐ Letter to Official Draftsperson Including  
Drawings [Total Pages ]11. ☒ Return Receipt Postcard12. ☐ Small Entity Statement(s)☐ Statements filed in prior application,  
(Status still proper and desired)13. ☐ Certified Copy of Priority Document(s)14. ☐ Deletion of Inventor(s)Signed statement attached deleting inventor(s) named in  
the prior application.15. ☒ Patent Application Data Entry Form16. ☐ Other:17. ☒ If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information:☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application Serial No. 09/428,702.Priority to the above application(s) is claimed under **35 U.S.C. 120**.Prior application information: Examiner: \_\_\_\_\_. Group/Art Unit: 2768.18. ☒ **Priority - 35 U.S.C. 119**☒ Priority of application Serial No. 60/154,667 filed on September 16, 1999 in U.S. is claimed under 35 U.S.C. 119.☐ The certified copy has been filed in prior U.S. application Serial No. \_\_\_\_/\_\_\_\_ on \_\_\_\_.☐ The certified copy will follow.**CORRESPONDENCE ADDRESS**Direct all correspondence to: Patent Administrator  
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#### Application Information

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Title Line Two :: ENTERPRISES OFFERING ITEMS FOR EXCHANGE  
Title Line Three :: OVER A COMMUNICATION NETWORK  
Total Drawing Sheets :: 13  
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#### Continuity Information

This application is a :: Continuation of  
>Application One :: 09/428,702  
Filing Date :: October 27, 1999  
And which is a :: Claims Benefit of  
>Application Two :: 60/154,667  
Filing Date :: September 16, 1999

**A SYSTEM FOR AGGREGATING INFORMATION  
FROM ENTERPRISES OFFERING ITEMS FOR EXCHANGE  
OVER A COMMUNICATION NETWORK**

**Reference to Related Applications**

This application is a continuation of co-pending U.S. patent application Serial No. 09/428,702, entitled "A System For Aggregating Information From Enterprises Offering Items For Exchange Over A Communication Network," filed October 27, 1999. This application also claims the benefit of co-pending U.S. provisional patent application Serial No.60/154,667, entitled "System and Method for Identifying and Monitoring Auctions Across Multiple On-line Auction Sites," filed September 16, 1999. The disclosures of both of the above cited applications are hereby incorporated by reference.

**Field of the Invention**

The present invention relates to a system for monitoring enterprises that offer items for exchange over a communication network. In one embodiment, the invention is directed to an automated system enabling shoppers to search for items offered for exchange at a plurality of electronic auction sites, and to place bids on, monitor, and/or track selected items.

**Background**

Electronic commerce ("e-commerce") over the Internet is growing rapidly. Both retail and wholesale suppliers have entered the e-commerce arena, selling a variety of goods and services. A challenge for shoppers in the e-commerce arena is not only to locate a desired good or service (collectively "an item"), but also to locate the desired

item at the lowest available price. One e-commerce industry addressing this challenge is the on-line auction industry.

Accordingly, on-line auctions are a rapidly growing segment of the overall e-commerce marketplace. In the context of the Internet and the World Wide Web ("Web"),  
5 on-line auctions have become very popular, consisting primarily of Web site companies offering their items for purchase in a merchant-to-person format. Other companies offer items for purchase in a person-to-person format. The person-to-person format is similar to posting a bulletin board of classified advertisements. Current estimates are that at least 5,000,000 people have participated in on-line auctions, with person-to-person auctions  
10 presently accounting for \$1.4 billion (70% of the market). Analysts expect that within four years merchant-to-person auctions will account for 66% of a \$19 billion market. A third type of on-line auction is the business-to-business auction. Business-to-business auctions are dedicated to a particular product or service category, and are estimated to reach over \$80 billion within the next four years.

15 The various types of auction sites described above function in a similar manner. Typically, a shopper accesses a Web site of the particular auction and places bids on one or more of the offered items. If a shopper wishes to place bids on items at more than one auction site, conventional systems typically require the shopper to access each of the Web sites individually to obtain information regarding the items up for auction at each site,  
20 and to register bids on the items in which the shopper is interested. Prior art systems also, typically, require shoppers to return to each of the individual auction sites every time they want to check on the progress of their bids, place higher bids, obtain information about new items available for auction, and the like. Prior art systems further

require shoppers to track the items on which they have placed bids at multiple auction sites, along with the account information registered with each of the auction sites, to follow the progress of the bids or to compare bids and pricing among similar items across multiple auction sites.

5 Further examples of on-line or network-based auction sites or services, operated similarly to the description above, and other types of on-line services providing some system for bidding on or purchasing items, or redeeming awards for items, offered or inventoried by the services, include U.S. Patent Nos. 5,835,896 to *Fisher et al.*; 5,794,210 to *Goldhaber et al.*; 5,715,402 to *Popolo*; 5,826,244 to *Huberman*; 5,774,873 to *Berent et*  
10 *al.*; 5,794,219 to *Brown*; 5,855,008 to *Goldhaber et al.*; 5,915,209 to *Lawrence*; 5,774,870 to *Storey*; 5,794,207 to *Walker et al.*; 5,715,314 to *Payne et al.*; 5,913,202 to *Motoyama*; 5,890,138 to *Godin et al.*; 5,862,223 to *Walker et al.*; and 5,818,914 to *Fujisaki*; along with EP 828,223 A2, EP 628,920 A1, JP 07-296082, and CN 1201202A, the disclosures of which are all hereby incorporated by reference.

15 Due to the recent proliferation of on-line auction sites available to shoppers, the requirement under conventional methods and systems to access each of the sites individually, and to manually accumulate information across multiple auction sites for purposes of tracking, comparing bids, comparing product description and determining availability can be a time consuming and inefficient process.

20 Additionally, if a shopper wants to ensure purchasing an item for the lowest available price, the shopper typically must also monitor retail and wholesale providers of items. Shoppers also need to monitor electronic trading sites, which rather than offering items for purchase, offer items for trade.

Accordingly, an object of the invention is to reduce the above described time consuming burdens on e-commerce shoppers generally, and on on-line auction participants, specifically.

Other general and specific objects of the invention will in part be obvious and will  
5 in part appear hereinafter.

### **Summary of the Invention**

To address the disadvantages and inefficiencies of the prior art, one embodiment, of the invention is a network-based system which provides a uniform graphical user interface that enables a user to observe, actively monitor and participate in multiple,  
10 concurrent and different on-line auctions, from one central place at one time. Such a system minimizes the need for the user, as a shopper, to learn how to use and exercise the different types of user interfaces at each of the different available on-line auction sites.

According to one embodiment, the invention comprises a system residing on a network that facilitates access by shoppers through remote computers or browsers across  
15 the network to at least one host computer. One or more host databases operatively connect to and are accessible by the host computer. The host computer communicates with a plurality of auction sites across the network. Software resides on the host computer, which is programmed to provide the functionality of the system. The host database stores both shopper specific information and information retrieved from on-line  
20 enterprise sites.

According to an alternative embodiment, the system of the invention provides direct user access to the network auction sites. In other words, the system does not

require remote computers for operation. The host computer can act both as a site server computer and as a shopper access computer.

According to a further embodiment, various tools and features of the system of the invention provide shoppers with the ability to enter personal and account information to be stored in the host database. The system further enables a shopper to search the host database by category and/or keyword for items of interest that are offered for exchange by one or more of the plurality of on-line enterprise sites supported by the system.

According to another embodiment, the on-line enterprise is an auction site and the system enables shoppers to obtain relevant and current auction information relating to each of the items offered by the auction sites, including, for example, a brief item description of the products or services, minimum required bid, current-bid price, historical pricing (previous high and low price and calculated average), closing price, lot quantity, and closing time for the auction of the items. The system also enables shoppers to obtain automatic updates of current auction information on a precisely scheduled or periodic basis, or on-demand in response to a shopper request. According to a further feature, the system is adapted for enabling shoppers to place bids and counter-bids on one or more desired items through direct hyperlinks to each of the auction sites offering the items of interest.

According to another feature, the system aggregates the auction information regarding selected items in a personalized listing associated with each particular shopper. Shoppers can use such information for comparison and tracking purposes. The system can also monitor the progress of the auctions and the bids placed by shoppers at each of the auction sites and automatically notify shoppers of being outbid on items with the



notification providing a hyperlink to the relevant auction site to place a counter bid. In a further feature, the system also automatically notifies shoppers of a previously identified item of interest being newly offered for purchase by a particular auction site. According to an additional feature the system provides the automatic notification, based on a  
5 previously identified category or keyword search.

One or more of the features described above, along with other features of the invention, are provided by the system, for example, through a My Auctions<sup>SM</sup> capability, in which a shopper can request that the system create a list of relevant auction information for all of the ongoing auctions of items at each of the auction sites that the  
10 user is interested in tracking, a personal Bid History<sup>SM</sup> maintained for each user; an Item Watch<sup>SM</sup> capability, in which the shopper is automatically informed when a particular item of interest at an auction site comes up for auction; and a Market Watch<sup>SM</sup> capability, in which the shopper can request that a keyword and/or category search be saved and the system automatically updates the search at periodic intervals and notifies the shopper of  
15 any new items being offered by the monitored auction sites.

According to a further feature, the system includes an automated bidding feature wherein a shopper can establish a maximum bid for items being auctioned at one or more auction sites, and the system automatically places initial bids at the outset of the auctions and increases the bids up to the established maximum bids at one or more strategic times  
20 during the auctions.

Other features, aspects and advantages of the invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings.

**Brief Description Of The Drawings**

For a fuller understanding of the nature and objects of the invention, reference should be made to the following description and the accompanying drawings, in which:

FIGURE 1 is a logical block diagram depicting interoperation between shoppers,  
5 enterprises and an illustrative system according to the invention;

FIGURE 2 is a logical block diagram of a host computer according to an illustrative embodiment of the invention;

FIGURE 3 is a high-level flow diagram depicting operation of the monitor of  
FIGURE 1;

10 FIGURE 4 is a more detailed flow diagram depicting operation of the monitor of  
FIGURE 1;

FIGURES 5A and 5B provide a flow diagram illustrating features of the system  
of FIGURE 1;

FIGURE 6 is an illustrative Home page generated by the viewer of FIGURE 1;

15 FIGURE 7 is an Illustrative Search Results page generated by the viewer of  
FIGURE 1;

FIGURE 8 is an Illustrative My Auctions<sup>SM</sup> page generated by the viewer of  
FIGURE 1;

FIGURE 9 is an Illustrative Deal Watch<sup>SM</sup> page generated by the viewer of  
20 FIGURE 1;

FIGURE 10 is an Illustrative Personal Information page generated by the viewer  
of FIGURE 1;

FIGURE 11 is an illustrative Categories page generated by the viewer of

FIGURE 1; and

FIGURE 12 is an illustrative Sign In / Sign Out page generated by the viewer of FIGURE 1.

**Description of the Illustrative Embodiment**

5           Electronic enterprise sites vary widely based upon the type of items available for exchange, and the rules associated with how exchanges are made. Items available for exchange include virtually anything of value, tangible or intangible, that can be legally exchanged for any other item of value. By way of example, items can include products, services, currency, real or intellectual property, rentals, information, promises, gambling  
10 wagers and the like. Offered items need not be exchanged only for currency, but may be exchanged or “swapped” for one or more other items of the same or different type.

Electronic auctions are particularly suited as electronic enterprise sites offering items for exchange. The illustrative embodiment of the invention is described below with respect to the monitoring of network-based electronic auction sites. However, as those  
15 skilled in the art will appreciate, the system of the invention may be employed to monitor and aggregate information with respect to virtually any network-based enterprise that offers items for exchange. According to the illustrative embodiment, the network over which the invention operates is the Internet; more specifically the World Wide Web (“Web”).

20           According to the illustrative embodiment, a system of the invention retrieves information from a plurality of auction Web sites. The system of the illustrative embodiment searches selected auction site Web pages and collects information including, for example, a brief description of the items available for purchase, minimum required

bid price, current bid price or prices, closing price, lot quantity, and closing time for the auction for each of the items available for purchase. The system of the invention stores the item information in a database. Shoppers search the database by category and/or keyword for items of interest. The system of the invention signals the shopper when the items of interest are offered for auction by one or more of the plurality of on-line auction sites supported by the system. Another feature of the illustrative system of the invention is that it automatically updates current auction information on a precisely scheduled or periodic basis, or on an on-demand basis in response to a shopper's request, and on a timed basis to capture time-sensitive information, such as the closing price for an auctioned item. The illustrative system also enables shoppers to place bids and counter-bids on one or more items through direct hyperlinks to each of the supported auction sites.

Another feature of the illustrative embodiment is that it aggregates the auction information on shopper-specified items in a personalized listing associated with each particular shopper for comparison and tracking purposes. The illustrative system also monitors the progress of the auctions and the shopper's bids placed at each of the auction sites. The illustrative system automatically notifies shoppers of being outbid on items, with the notification providing the opportunity through a direct hyperlink to the relevant auction site to place a counter-bid. The illustrative system also automatically notifies shoppers if a previously identified item of interest is newly offered for purchase by a particular auction site. In an extension of this feature, the system of the illustrative embodiment automatically notifies shoppers regarding newly available items that fall within the scope of previously entered search information.

According to the illustrative embodiment, the system of the invention aggregates all of the information from a plurality of auction sites into a single Web site. Thus, rather than having to monitor and interact with different user interfaces of multiple auction Web sites, the illustrative embodiment enables shoppers to interact with only a single graphical user interface to more efficiently accomplish the same goal.

FIGURE 1 depicts a logical block diagram 100 of a network arrangement employing an automated auction monitoring system 102 according to an illustrative embodiment of the invention. As shown, the system 102 includes a host computer 104 and a database 106. The database 106 can include any type of non-volatile storage devices such as, magnetic, optical, or dynamic electronic storage devices. Shoppers communicate with the system 102 by way of the shopper access devices 108a-108d over the network 110. The shopper access devices 108a-108d can be, for example, work stations, personal computers, lap top computers, personal digital assistants, or any device capable of transmitting a signal between the shopper (user) and the host computer. The system 102 communicates with a plurality of auction sites over the network 110 by way of the auction site server computers 112a-112d. Although, the diagram 100 depicts a particular number of shopper access devices 108a-108d and a particular number of enterprise server computers 112a-112d, skilled artisans will appreciate that the system 102 can communicate with any number of shopper access devices and enterprise site server computers over the network 110. According to the illustrative embodiment, the network 110 is the Internet, and shoppers access the auction monitoring system 102 by accessing a Web site serviced by the host computer 104. However, the methods and system of the invention can be applied to any communication network, be it public or

private, electrical, optical or otherwise. The methods and system of the invention may also be employed with multiple networks.

The host computer 104 executes a plurality of software modules 114-122. The software modules 114-122 communicate with each other by way of an operating system

5 124. Any number of multi-tasking operating systems, such as UNIX<sup>®</sup> or Windows/NT<sup>®</sup> can be employed as the operating system 124. Illustratively, the host computer 104 executes a monitor 114, a notifier 116, a viewer 118, a search engine 120, and a site access facilitator 122. The modules 114-122 are first briefly described, and then each module is described in further detail below.

10 The monitor 114 monitors the exchange activity being conducted at various electronic auction sites 112a-112d, detects the occurrence of certain events, such as the availability of a shopper requested item, and stores representations of such events in the database 106. The notifier 116 notifies shoppers of the occurrence of events, such as the availability of an item. The notifier 116 notifies shoppers by way of electronic mail, ICQ  
15 Internet messaging, pager, facsimile, digital telephone or other computer initiated communication method. The viewer 118 provides an interface between the shopper access devices 108a-108d and the enterprise monitoring system 102. As described in further detail with respect to FIGURES 6-12, according to the illustrative embodiment, the viewer 118 provides a plurality of interactive graphical user interface (GUI) pages  
20 through which shoppers interact with the system 102. In the illustrative embodiment, the viewer 118 is depicted as providing a host graphical user interface pages to the shopper access devices 108a-108d. However, as those skilled in the art will appreciate, the system 102 can alternatively operate without shopper access devices 108a-108d. Instead,

shopper(s) may access the system 102 directly through the host computer 104. In that case, the viewer 118 provides the host graphical user interface pages directly to a host display device.

According to one embodiment, in response to a shopper's request, the viewer 118  
5 invokes the search engine 120. In response, the search engine 120 searches the database 106 for items, which meet criteria specified by the shopper, and which are available at one or more of the scanned auction sites 112a-112d. In response to a shopper's request to place a bid, the viewer 118 invokes the site access facilitator 122. The site access  
facilitator 122 hyperlinks the shopper to the auction site of interest. The site access  
10 facilitator 122 also enables the shopper to hyperlink back from an auction site to a GUI page of the viewer 118. In this way, regardless of whether a shopper actually places a bid, the shopper can return to the Web site of the system 102, with the viewer module 118 providing a GUI page for the shopper to monitor the status of the bidding for the item of interest. According to a further feature of the invention, a plurality of shoppers  
15 can simultaneously access the system 102 via the shopper access devices 108a-108d over an Internet browser.

FIGURE 2 is a simplified block diagram of the host computer 104 of FIGURE 1. As shown, the host computer 104 includes a central processing unit (CPU) 200, a display device 202, a console input device 204, a network interface 206, an I/O port 208, and a  
20 random access memory (RAM) 210, all in communication over an internal host computer bus 212. Also depicted with the host computer 104 is the database 106.

In operation, the database 106 communicates with the CPU 104 by way of the I/O port 208. The CPU 200 controls the operation of the host computer 104. The display

device 202 displays information to a system administrator/programmer. The input device 204, which is by way of example a keyboard and mouse, enables the system administrator to direct the operation of the host computer 104. The network interface 206 enables communication between the host computer 104 and the shopper access devices 108a-108d and the enterprise sites 112a-112d, all by way of the network 110. The memory 210 stores the application programs 214 and the operating system software 218 for execution by the host computer 104. The memory 210 also stores data used by the application programs 214 and the operating system software 218.

According to the illustrative embodiment, the application programs 214 include the monitor 114, the notifier 116, the viewer 118, the search engine 120 and the access facilitator 122. The application programs 214 also include the database architecture employed for storing information in the database 106 and the tools for accumulating, aggregating, updating, storing and maintaining both auction information and personal and account information for shoppers. Suitable programming languages for the application programs 214 include Java, C, and C++.

Although the system 102 is illustratively depicted with a single host computer 104, those skilled in the art will appreciate that the system operation may alternatively be distributed over a plurality of host computers, with the execution of the application programs 214 also being distributed over the plurality of host computers. Each of the software modules 114-122 will now be discussed in detail.

FIGURE 3 is a simplified flow diagram 300 illustrating operation of the monitor program 114 of FIGURE 1. As shown at 302, the monitor 114 causes the host computer 104 to scan/search the auction sites 112a-112d for information that is posted by those



sites and is of interest to the system 102. As shown at step 304, the host computer 104 then processes the retrieved information, by filtering out irrelevant information, such as for formatting, and by converting the relevant information to a format conducive for storage in the database 106. As illustrated in step 306, the host computer 106 then stores  
5 the database formatted information in the database 106 for later shopper access by way of the user access devices 108a-108d through the viewer 118 and the search engine 120. The information stored in the database 106 can also be accessed by other software modules such as the notifier 116.

Performing the scanning step 302 at regular time intervals, such as every thirty  
10 minutes, ensures that the information stored in the database is relatively fresh. Without frequent monitoring, auction information can become outdated and thus virtually valueless to shoppers. According to the illustrative embodiment, the monitor program 114 schedules the scanning step 302 of FIGURE 3 at specific time intervals, at dynamically occurring instances to accommodate particular auction circumstance as they  
15 arise over time, and as discussed in further detail below with regard to FIGURE 4, at the request of a shopper.

Update scheduling based upon auction specific circumstances varies based upon the information gathered at a particular auction site. For example, the closing time for the bidding associated with the sale of a particular item is unique to that item.  
20 Information associated with bid and final sale statistics for an item may only be available at the auction site for a limited time after the closing time for the item. Thus, the monitor 114, identifies the closing time for particular items during an initial scan of the auction site, and then schedules a precisely timed scan of that same auction site to gather the

closing time statistics associated with the particular items. For efficiency, auction site scans, whether regularly scheduled, based upon specific anticipated events (such as an auction closing time), or shopper initiated, are all used to gather other information that happens to be available.

5           FIGURE 4 shows a more detailed flowchart 400 illustrating operation of the monitor 114. In operation, the system 102 initializes the host computer 104 to perform auction site scans at precisely scheduled times, preset time intervals, or on demand. The scheduling may be dynamically determined based upon the content of previously scanned information. As shown at 401, the monitor 114 tests to determine if an precisely  
10   scheduled anticipated event scan is required. If not, as shown at 402, the monitor 114 tests to determine if a preset time interval has elapsed. If a preset time interval has not elapsed, as shown at 404, the monitor 114 tests to determine if a shopper has requested that the auction information in the database 106 be updated. The monitor 114 continues to test for the occurrence of an anticipated event, the elapse of a preset time interval or a  
15   shopper request.

In response to detecting one of these occurrences, the monitor 114 performs the scanning operation 302 of FIGURE 3. As shown at step 406, the scanning operation 302 includes locating HTML pages in an HTML page hierarchy tree of the auction site. Additionally, the scanning operation 302 can include locating XML pages in an XML  
20   hierarchy tree of the auction site. In the illustrative embodiment, the database 106 stores configuration files for each of the monitored auction sites. The configuration files indicate in which fields of the HTML pages information of interest is stored. As indicated at step 408, the monitor 114 uses the configuration files to scan out HTML

formatting and other non-textual information from each HTML page, leaving pure text, which the monitor 114 converts to a UNICODE representation. As shown at 410, the processing step 304 of FIGURE 3 includes pattern searching the UNICODE text using regular expression algorithms to search for specific text phraseology. As indicated at 5 412, the processing step 304 also includes parsing identified text strings into specific data types and then, as shown at 414, aggregating, organizing and structuring a subset of the individual data types into database tables and records. Scanning the HTML pages, as described in step 302, is referred to as "crawling" the auction site.

As indicated at 416, subsequent to organizing the data types into database tables and records, the monitor 114 determines whether new database records need to be created 10 or whether existing database records need to be updated. If the monitor 114 detects a new item listed for exchange at one of the auction sites, then as shown at 418, it creates a new record for the item in the database 106. Alternatively, if a record already exists for the item, then as shown at 420, the monitor 114 updates the auction information for the 15 existing record. As shown at 422 and 424, prior to storing the updated auction information in the database 106, the monitor 114 may also calculate additional statistical information, such as historical pricing information for items offered for purchase at the auction site.

The data extraction and processing method illustrated by steps 406-414 is 20 particularly insensitive to the manner in which auction sites post information. As discussed above, the monitor 114 strips away format information from the textual content. In this way, the monitor 114 operates independently of formatting and other site

aesthetics, such as color schemes. This insensitivity enables the illustrative system 102, to readily adapt to changes in auction site formatting.

A further feature of the illustrative monitor 114 is that it includes an expiration timer, capable of being updated. The expiration timer is associated with records in the database 106. The monitor 114 uses the expiration timer for periodically identifying and deleting or transferring records from the database 106 after an established time period has elapsed, and for initiating additional processing and/or notification.

In the illustrative embodiment, the HTML page crawler executes continuously as a Java<sup>®</sup> application controlled by a scheduler component, configuration files which map particular auction site HTML page trees and the associated informational content, a Java<sup>®</sup> “spider” class that discovers new HTML pages, an HTML parser to find hyperlinks between pages, an item category parser to categorize pages of items within a taxonomy of categories, and an item parser to extract item-specific, auction-related information. The spider class is capable of feeding back newly discovered HTML page information to the configuration files automatically. The monitor 114 performs the regular expression searching functionality via the Perl 5 standard, implemented in Java<sup>®</sup>. The monitor 114 also filters out illegal items and flags errors to a host computer administrator/programmer by way of log files and the display device 202.

Site information that exists only inside a limited time window force real-time page crawling performance constraints upon the crawler. Accordingly, the system 102 employs multi-threaded HTML page crawlers, which in effect, crawl multiple portions of an HTML tree in parallel to minimize the over all time to crawl the entire auction site HTML tree.

The viewer 118 executes on the host computer 104 to provide a graphical user interface for the system 102. In the illustrative embodiment, the viewer 118 provides a system Web site, an example of which is located at address [www.biddersedge.com]. At the system Web site, the viewer provides a plurality of Web pages that enable a shopper to monitor and participate in auction activity occurring at a plurality of auction sites. The viewer 118 includes foreground process software that detects signals from the shopper access devices 108a-108d. Preferably, a shopper enters requests at a shopper access device 108a-108d by way of a mouse or keypad. The viewer 118 detects the requests and responds by displaying the requested information.

The pages created by the viewer 118 each provide different information to a shopper. Accordingly, the viewer 118 also enables shoppers to navigate between each of the available pages. Briefly, the GUI pages generated by the viewer 118 include a page navigation menu bar, near the top of each page, which allows the shopper to directly navigate to any of the other viewer pages. When a shopper logs into the Web site of the illustrative embodiment, the viewer 118 displays a Home page to the shopper. The shopper interacts with the search engine 120 from a plurality of the pages generated by the viewer 118. An illustrative Home page, along with other illustrative GUI pages generated by the viewer 118 are discussed in further detail below with respect to FIGURES 6-12.

In response to a shopper's command, the viewer 118 can invoke the search engine 120 to query the database 106 for items associated with a particular item category and/or keyword expression. Alternatively, the viewer 118 can invoke the site access facilitator 122 to enable the shopper to directly access and participate in a particular auction site

activity, such as bidding. The site access facilitator also enables the shopper to hyperlink from an auction site back to the Web site of the illustrative embodiment.

FIGURES 5A and 5B provide a flow diagram 500 which illustrates features of the system 102. As skilled artisans will appreciate, there exists innumerable paths through which a shopper might traverse the features of the system 102. Thus, the flow diagram 500 is intended to cover only an exemplary path, with the intention of illustrating the many features of the invention.

In the illustrative flow diagram 500, a shopper enters the system 102 by way of the Home page 600 depicted in FIGURE 6. The Home page 600 includes a page navigation menu bar 602, which highlights the Home page menu button entry 604 to indicate that the shopper is currently viewing the Home page 600. The other buttons 606-616 on the navigation menu bar 602, enable a shopper to navigate to other GUI pages generated by the viewer 118. By way of example, the button 606 signals the viewer 118 to present the Sign In/Sign Out page 1200 of FIGURE 12. The button 608 signals the viewer 118 to present the Categories page 1100 of FIGURE 11. The button 610 signals the viewer 118 to present the My Auctions<sup>SM</sup> page 800 of FIGURE 8. The button 612 signals the viewer 118 to present the Deal Watch<sup>SM</sup> page 900 of FIGURE 9. The button 614 signals the viewer 118 to present the Personalize page 1000 of FIGURE 10, and the button 606 signals the viewer to present a Help page (not shown).

A feature of the illustrative system 102 is that it enables shoppers to search for items in the database 106 based on categories, keywords and any combination of the two. In the illustrative flowchart 500, a shopper decides at 502 whether to search for an item by categories. To facilitate such a search, the Home page 600 includes a categories list

626. The categories list 626 displays high-level categories of items contained in the database 102. In response to a shopper selecting a high-level category 626, the system 102 determines in step 506 whether any subcategories of the selected category include further subcategories. If such is the case, the viewer 118, in step 508, displays the subcategories for the selected category. Additionally, the system 102 enables the shopper to further narrow their search by selecting one of the displayed subcategories. As indicated at 506 and 510, if no further subcategories exist, the viewer 118 displays the search results by way of the Search Results page 700 of FIGURE 7.

As indicated at 512, the search engine 120 also enables shoppers to limit an item search by keyword. To facilitate this feature, the Home page 600 provides “Find It” interfaces 618 and 620. The “Find It” interfaces 618 and 620 have associated text entry locations 622 and 624, respectively, for entering keyword queries. Should a shopper decide to perform a keyword search in step 514, the shopper enters the keywords in either of fields 622 or 624. As indicated at 516, the search engine 120 also enables shoppers to limit the type of keyword search performed. To facilitate this feature, the page 600 includes a pull-down menu bar 628. As indicated in step 518, using the menu bar 628, a shopper can direct the search engine 120 to search the database 106 based on all of the words in the field 628, or alternately, based on any of the words in the field 628. Additionally, the shopper can limit the search to the “+/- Style” with regard to the words in the field 628. A “+” character preceding a keyword narrows the search to items containing at least one instance of the keyword. A “-” character narrows the search to items not having any occurrences of the keyword. As indicated at 520, the search engine 120 further enables shoppers to limit a search by auction site. As shown at step 522,

should a shopper decide to so limit a search, the shopper uses the pull-down menu 630 to restrict the keyword search to items at one of the supported auction sites, or alternatively, to items at any of the supported auction sites, by default.

As indicated at 524, according to the illustrative embodiment, shoppers can adjust  
5 the search criteria. By way of example, a shopper can choose to restrict a search further by category in steps 502 and 506, by keyword in step 512, by type of search in step 516, or by auction site in step 520. Additionally, a shopper can employ any combination of keyword and category restrictions on a search.

A further feature of the illustrative embodiment is that the viewer provides a  
10 graphical display of the categories to which a shopper's keyword search applies. By way of example, in response to a shopper selecting a category from the category list 626, the viewer 118 displays any available subcategories. Similarly, in response to a shopper selecting a displayed subcategory, the viewer 118 displays any available subcategories of the selected subcategories. If a shopper conducts a keyword search, the specified search  
15 criteria only applies to the categories or sub-categories displayed on the current GUI page by the viewer. This feature aids the shopper in visually restricting searches to particular "branches, or leaves" of a category hierarchy tree (displayed in the categories list 626), while further restricting how the search engine interprets the keyword search text. As discussed above with respect to step 510, when no more subcategories are available, the  
20 viewer 118 navigates to the Search Results page 700 and displays the search results in the search results section 724.

As illustrated at 526, a shopper initiates a search by actuating (clicking) one of the "Find It" buttons 618 or 620. As shown at 510, actuating a "Find It" button 618 or 620



causes the viewer 118 to display the results returned from the search engine 120.

FIGURE 7 shows an illustrative Search Results page 700 generated by the viewer 118, for displaying search results returned from the search engine 120.

As illustrated in FIGURE 5B and as discussed below with respect to FIGURES 7-12, the system 102 provides shoppers with a number of features by way of the Results page 700. By way of example, as illustratively depicted at 534 in FIGURE 5 and at 724 in FIGURE 7, a shopper can select the type of auctions to be included in a search. More specifically, the system 102 enables shoppers to select whether they want to participate in person-to-person auctions, merchant-to-person auctions or both. The system 102 defaults to including both. If a shopper decides to select an auction type, then the shopper performs the auction selection (step 536) by selecting one of the radio buttons 726a-726c.

Another feature of the system 102, illustrated at 538 in FIGURE 5 and at 728 in FIGURE 7, is that a shopper can narrow a search by matching category from the Search Results page 700. If, as indicated in step 540, a shopper chooses to narrow the search by category, the shopper selects one of the match categories 728 displayed in the matching categories field 730. By selecting one of the matching categories, the displayed search results will be restricted to those items falling within the selected matching category 728.

As shown in FIGURE 7, the Search Results section 702 of the page 700 includes a Current Auctions field 704. The Current Auctions field 704 displays items returned by the search engine 120, along with the auction sites at which the items can be found. The Search Results section 702, also includes an Approx. Bid field 706, a Close field 708, a Past Prices field 710, and a Tools field 712. The Approx. Bid field 706 displays the most up to date information with regard to the current bid on the item. The Close field 708

provides the bid closing time and date. The Past Prices field 710, as in the case of field 810a and 810b of FIGURE 8, provides historical pricing information, if available.

An additional feature of the system 102 illustrated at 542 in FIGURE 5B and at 714 in FIGURE 7, is that a shopper can choose whether to include items listed in the search results field 702 in the My Auctions<sup>SM</sup> list 802 of the My Auctions<sup>SM</sup> page 800. The search engine 120 periodically updates auction information for items so listed. In this way, the system 102 enables shoppers to compare prices for the same item being offered at different auctions. To store an item in the My Auctions<sup>SM</sup> list (step 544), the shopper actuates the button 714.

Another feature of the system 102, illustrated at 546 in FIGURE 5B and at 716 in FIGURE 7, is that a shopper can choose whether to include items listed in the search results field 702 in the Item Watch<sup>SM</sup> section 908 of the Deal Watch<sup>SM</sup> page 900 of FIGURE 9. The search engine 120 periodically searches the auction sites 112a-112d to determine the availability of items placed in the Deal Watch<sup>SM</sup> list. According to the illustrative Deal Watch<sup>SM</sup> feature, the monitor 114 only signals a shopper that a Deal Watch<sup>SM</sup> occurs if the monitor locates an exact match for the listed item. Thus, Deal Watch<sup>SM</sup> related searching is less time consuming than the searching associated with the Market Watch<sup>SM</sup> feature, and therefore can be performed more frequently.

According to the illustrative embodiment, the buttons 714 and 716 signal the viewer 120 to display an updated Search Results page 700 to the shopper. However, if the shopper wishes to navigate, for example to the My Auctions<sup>SM</sup> page 800, the shopper clicks on the hyperlink field 718. Similarly, to signal the viewer 120 to navigate to the Item Watch<sup>SM</sup> list 908 in the Deal Watch<sup>SM</sup> page 900, the shopper clicks on the hyperlink

field 720. Moreover, shoppers can signal the viewer to navigate to other GUI display pages by actuating one of the buttons in the navigation tool bar 602 or by actuating one of the hyperlink fields in the footer section 603.

As shown in FIGURE 5 at 528, the system 102 also enables shoppers to decide  
5 whether to store a particular search strategy. As shown at 530, if a shopper decides to store a search strategy, the shopper actuates the Market Watch<sup>SM</sup> button 722. In response to activation of the Market Watch<sup>SM</sup> button 722, as indicated at 532, the viewer 118 hyperlinks the shopper to the Deal Watch<sup>SM</sup> page 900, and the search engine 120 periodically repeats the search using the stored search criteria. In response to new items  
10 falling within the scope of the stored search criteria, the notifier 116 signals the shopper.

The search results may be displayed to the shopper in a variety of formats. The system 102 is also capable of sorting the search results prior to presentation to the shopper, according to criteria established within the system 102, such as, by category, title, auction site, price, closing time of the auction and the like.

15 The system 102 is also capable of correlating the subject matter of a particular shopper's search with the advertisements of various companies to display advertisements to the shopper for items in which the shopper might be interested. The advertisements may be displayed by the system 102 to the shopper according to other criteria, for example, what items the shopper has requested that the system 102 tracks, the types of  
20 searches conducted by the shopper, the various features of the system that the shopper has accessed, and any other criteria that advertisers believe indicates that their advertisements will find the desired audience.

FIGURE 8 shows an illustrative My Auctions<sup>SM</sup> page generated by the viewer 118 for displaying the current auction status of all items added to the Auction Watch<sup>SM</sup> item list for example, by way of the button 714 of FIGURE 7. As shown in FIGURE 8, the My Auctions<sup>SM</sup> page 800, includes a navigation menu bar 602 and a footer hyperlink field 603 for enabling a shopper to navigate between available GUI pages. The page 800 also includes keyword search text fields 622 and 624, "Find It" search initiation buttons 618 and 620, search narrowing menus 628 and 630, and a category list 626. The page 800, further includes a My Auctions<sup>SM</sup> section 802.

The My Auctions<sup>SM</sup> section 802 includes an item field 804 for displaying the monitored items. The section 802 also includes a Quantity and Price field 806, a Close field 808, a Price History field 810, and a Bid field 812. The Quantity and Price field 806 displays the number of items available and the asking price. The Close field 808 displays the time and date at which the auction closes the bidding for the item of interest. The Price History fields 810a and 810b provide information regarding prior sales of the item of interest, if available. The Bid field 812 provides relevant bid status information to the shopper, such as, the shopper has not bid, the shopper has bid and is losing, the shopper has bid and is winning. If the shopper has not entered account information for an auction site listed in the My Auctions<sup>SM</sup> section, the system 102, by way of the field 812, prompts the shopper to activate a hyperlink to record account information for the auction site.

The My Auctions<sup>SM</sup> section 802 also includes two buttons 814 and 816. The button 814 enables a shopper to remove items from the My Auctions<sup>SM</sup> page 800. The button 816 enables a shopper to add an item, displayed in the My Auctions<sup>SM</sup> section 802, to the Item Watch<sup>SM</sup> section 906 of the Deal Watch<sup>SM</sup> page 900 shown in FIGURE 9. The

My Auctions<sup>SM</sup> page 800 also includes an update button 818. Actuating the update button 818 signals the monitor 114 to update the auction information with regard to the items listed in the My Auctions<sup>SM</sup> section 802.

In operation, the My Auctions<sup>SM</sup> feature serves as a personal list of desired items, and provides a control panel 800 that enables a shopper to monitor the items all at once in a centralized location, even if the items are being offered simultaneously by different auction sites. With this capability, shoppers can track the status of items they are only considering, as well as the status of items on which they have placed bids.

Through the use of the button 816, a shopper can add a plurality of items to the displayed list. The system automatically updates the auction information for each of the items on the list, preferably every thirty minutes; when requested by the shopper by way of the update button 818; or when certain events or milestones occur. The My Auctions<sup>SM</sup> list is useful as a comparison shopping tool, by enabling the shoppers to list and track the auction information for related items offered by one or more auction sites, including, for example, price histories, current bids and closing times.

The system 102 enables the shopper to initiate participation in an auction for any of the items listed on the My Auctions<sup>SM</sup> list. The system 102 accomplishes this by providing hyperlinks to the auction sites offering the listed items for purchase. A shopper initiates the hyperlink by clicking on a listed item. In response to a shopper activating the hyperlink for a given item, the site access facilitator 122 establishes a connection across the network 110 between the shopper and the auction site associated with the item. The shopper places a bid on the item according to the procedures dictated by the auction site, which typically include registering a user name or other identifier with the auction site

that is unique to the shopper. As mentioned above, from the My Auctions<sup>SM</sup> list 802, the system 102 enables shoppers to enter auction site registration identification names as account information for each particular item in the list. Once the account information is entered by the shopper for the items on which the shopper has placed bids, the account information is stored in the database 106, and the system 102 uses the account information to track the status of the shopper's bids at the auction sites. As also previously mentioned, the system 102 reports the status of the shopper's bids on the My Auctions<sup>SM</sup> page 800 and optionally, automatically sends the shopper a notification by way of electronic mail, Internet messaging, pager, facsimile, digital telephone or other computer initiated communication method. According to the illustrative embodiment, the notification provides the shopper with the number of items available that fall within the scope of the Market Watch<sup>SM</sup> search parameters. When the shopper responds to the notification, the system 102 provides the shopper with a complete list of qualifying items, at the time of the shopper's response.

According to a further feature of the illustrative embodiment, the system 102 maintains a personal history of the items of interest and related auction information for the shoppers, including items on which the shoppers have bid in the past and the final closing price of the items for reference purposes. The shopper can request that a listing of the personal bid history be displayed for viewing by the user, for example, by way of the link 818 of FIGURE 8 and the footer section 603. Shoppers may also reorder the list, and remove items from it.

FIGURE 9 depicts an illustrative Deal Watch<sup>SM</sup> page 900 generated by the viewer 118. As in the case of the previous discussed GUI pages, the Deal Watch<sup>SM</sup> page 900

includes a menu bar 602 for enabling shoppers to navigate between the available GUI pages. The page 900 also includes keyword search fields 622 and 624, a categories list 628, search limiting menus 628 and 630, and search initiating buttons 618 and 620.

The Deal Watch<sup>SM</sup> page 900 further includes a Market Watch<sup>SM</sup> section 902. The  
5 Market Watch<sup>SM</sup> section 902 displays a description of the search criteria to be used to identify newly available items. The previous search criteria may have been entered by way of browsing categories, entering a keyword search, or a combination of both. The Market Watch<sup>SM</sup> section includes two buttons 904 and 906. The button 904 removes items from the Market Watch<sup>SM</sup> list. The button 906 signals the monitor 114 to update  
10 the search information with respect to an associated listed item.

According to the illustrative embodiment, the system 102 automatically searches the updated auction information on a periodic basis. The notifier 116 signals the shopper in response to new items that come up for auction at the supported auction sites that fall within the scope of the stored searches. The shopper has the opportunity through a  
15 hyperlink provided by the notifier 116 to connect across the network 110 to the system 102 to review the new items being offered for purchase at the auction sites 112a – 112d.

The Deal Watch<sup>SM</sup> page 900 additionally includes an Item Watch<sup>SM</sup> section 908. The Item Watch<sup>SM</sup> section 908 lists in field 910 items that a shopper selects for monitoring. The field 910 provides the name of the item being monitored, along with the  
20 auction site at which the item is available and the pricing history for the item. The Item Watch<sup>SM</sup> section 908 includes a button 912 for signaling the monitor 114 to discontinue monitoring an associated item and to signal the viewer 118 to remove the item from the Deal Watch<sup>SM</sup> page 900.

For each of the items listed in the field 910, the system 102 automatically searches through updated auction information. The notifier 116 informs the shopper when the item comes up for auction again at the particular auction site associated with the item. According to an additional feature, in response to the notification, the shopper can connect across the network to the My Auctions<sup>SM</sup> page 800 where the item is automatically added to the My Auctions<sup>SM</sup> list. Items can also be added to the field 910 list from the Search Results page 700, or the personal bid history of items maintained by the system 102 for the shopper.

FIGURE 10 depicts an illustrative Personalize page 1000 generated by the viewer 118. The Personalize page 1000 includes a Change Password section 1002, a Personal Information section 1012, and a Time Zone Correction section 1028. The Change Password Section 1002 has a field 1004 for entering a Login identification. Once a shopper enters a Login identification, he or she can enter a new password in the field 1006. The shopper then repeats the new password in the field 1008. The shopper actuates the button 1010 to submit the updated information.

The Personal Information section 1012 enables a shopper to enter their first name in the field 1014 and their last name in the field 1016. The check boxes 1018 and 1020 enable the shopper to request confirmation of the updated personal information by way of either an email address entered in the text box 1022, or an Internet messaging address entered in the text box 1024. The shopper submits the personal information by actuating (i.e., clicking) the button 1026.

The Time Zone Specification section 1028 enables a shopper to select a time zone in which he or she is operating. The pull-down selection box 1030 provides the available



time zone selections. Actuating the button 1032 submits the shopper's time zone selection.

Although, not shown, the page 1000 also enables a shopper to register account information for any supported auction site at which he or she is registered for bidding.

5 This enables the monitor 114 to detect and track the shopper's bidding activity at the supported auction sites 112a-112d.

FIGURE 11 depicts an illustrative Categories page 1100 generated by the viewer 118. The Categories page 1100 enables a shopper to expand the item category hierarchy tree. The page 1100 includes a Category Index section 1102. The Category Index  
10 section 1102 includes a list of categories 1104. In response to a shopper selecting one of the categories 1104, the viewer 118 displays a list of related sub-categories, much in the same way as when a shopper selects a category from the Category list 626 in FIGURE 6.

FIGURE 12 depicts an illustrative Sign In / Sign Out page 1200 generated by the viewer 118. Navigating to this page automatically logs the shopper out of the system  
15 102. The page 1200 gives the shopper an opportunity to re-log into the system 102 by entering a member name in the field 1202, a password in the field 1204, and actuating the submit button 1206.

Thus, from the above description of FIGURES 5-12, skilled artisans will appreciate that searches can be initiated and then narrowed from a number of the GUI  
20 pages generated by the viewer 118.

The site access facilitator 122 of FIGURE 1 will now be discussed. The site access facilitator 122 of operates in conjunction with the viewer 118 to provide a shopper with hyperlinks to any of the auction sites 112a-112d monitored by the shopper. In

operation, the access facilitator 122 logically “plants” the Internet URL addresses for the auction sites associated with each listed item behind the item. Thus, in response to a shopper selecting a listed item, the access facilitator 122 hyperlinks the shopper to the page of the auction site associated with the selected item. The shopper may participate in the bidding or other site specific activity at the linked site, or actuate the browser BACK button to return to the previous viewer 118 generated page.

As discussed above with respect to FIGURE 4, the monitor 114 extracts information from the auction sites 112a-112d. The host computer 104 then indexes various data from the extracted auction information and associates that data with categories and subcategories established within the system 102. The categories and subcategories were discussed above with respect to the Categories list 626 and the Categories page 1100. In effect, the host computer 104 creates a mapping between the categories and subcategories and the auction item information records stored in the database 106.

Such a mapping is illustrated below. As shown, in response to shopper's search using the keyword "Pentium®" the search engine 120 determines that there are three items stored in the database 106 containing the keyword. As illustrated, item 5 is a Zenith® Pentium® Desktop computer. The record provides the price (\$649.00), and the network address of the auction site at which the item can be found.

Pentium	1, 5, 9	<i>the word pentium is found in items 1, 5, and 9</i>
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5	NEW Zenith Pentium Desktop computer	\$649.00	[network address of auction site]	<i>Record of item 5</i>
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The viewer 118 displays the retrieved records, formatted as search results, to the shopper.

A further feature of the illustrative embodiment is that the system 102 enables shoppers to enter comments regarding items, auction sites, and various features of the system 102. TABLE 1 provides an illustrative database structure for storing shopper comments. As shown below, TABLE 1 includes a first column identifying the data element name, a second column identifying the data element type, and a third column providing a description of the data element.

DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this comment was entered into the system
Batch number	Long	Part of item reference
Item number	Integer	Part of item reference
User ID	Long	User who entered the comment
Comment	String	Text of the comment

**TABLE 1**

Another feature of the illustrative system 102 is that it enables shoppers to add hyperlinks to auction sites, items, related items, other sites on the network 110 and the like. TABLE 2 provides an illustrative database structure for storing such information. As shown below, TABLE 2 includes a first column identifying the data element name, a second column identifying the data element type, and a third column providing a description of the data element.

DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this hyperlink was entered into the system
Batch number	Long	Part of item reference
Item number	Integer	Part of item reference
User ID	Long	User who entered the hyperlink
Link type	Integer	1=retail site, 2=item review, 3=manufacturer's spec page,

DATA NAME	DATA TYPE	DATA DESCRIPTION
		etc.
Link	String	Network address entered by user

**TABLE 2**

An additional feature of the illustrative system 102 is that it enables a shopper to  
 5 rate various system features. TABLE 3 provides an illustrative database structure for  
 storing ratings information. As shown below, TABLE 3 includes a first column  
 identifying the data element name, a second column identifying the data element type,  
 and a third column providing a description of the data element.

DATA NAME	DATA TYPE	DATA DESCRIPTION
Time	Long	Time this rating was entered
Batch number	Long	Part of item reference
Item number	Long	Part of item reference
User ID	Long	User who entered this item of interest
Rating	Byte	Numerical rating (scale may be different for different things)

10

**TABLE 3**

As mentioned above, the system 102 may be employed to monitor virtually any  
 network-based enterprise that offers items for exchange. With regard to the illustrative  
 auction site monitoring embodiment, the system 102 supports at least three different  
 15 types of electronic auction sites: merchant-to-person; person-to-person and business-to-  
 business.

In a person-to-person auction the company that administers the auction site is not  
 the actual seller of the item, but instead acts as an intermediary between the seller and the  
 buyer. The person-to-person auction is similar to providing a bulletin board of classified  
 20 advertisements. Typically, the auction site is not responsible for the final transaction;  
 rather the highest bidder and the seller contact each other after the auction is closed to

arrange payment for and delivery of the item. Though the seller can be a person, it can also be a business. This type of transaction is based partially on trust, because the transaction is not automatically consummated at the time of the auction closing. Several of these types of auction sites provide a service for posting comments and ratings from other buyers, and some of these types of auction sites offer an optional service (for a fee) where they will act as an escrow agent for the transaction. As discussed above with respect to TABLES 1-7, the illustrative system 102 of the invention also enables shoppers to provide comments and/or ratings of the supported auction sites.

Merchant-to-person auction sites sell the item directly to the buyer, similar to purchasing an item from a store. There is often some type of warranty provided on the item, and the auction site itself is responsible for completing the transaction with the buyer. Typically, individuals cannot list items with these auction sites. The buyer typically provides a credit card to register to bid on items, and once the buyer places a bid, the buyer generally cannot withdraw it. The final price of the item, plus shipping, is billed to the buyer's credit card, and the item is automatically shipped to the buyer..

Business-to-business auctions facilitate the sale of merchandise between two companies, as opposed to individuals. Typically, merchandise is sold in volume and in a wholesale manner.

In this way, the invention provides a network-based system and methods for aggregating information enterprises offering items for exchange over a communication network, wherein the enterprises include, but are not limited to on-line auction sites, and wherein according to one embodiment, the monitoring includes retrieving, processing,

storing, and displaying to a shopper information regarding items offered for purchase at the on-line auction sites.

Having described the invention, what is claimed for letters Patent is:

1 1. A method for aggregating information from a plurality of enterprises offering  
2 items for exchange over a network, comprising,  
3 automatedly collecting and analyzing information about said items from  
4 enterprise databases associated with each of said enterprises by use of a host computer in  
5 communication with said enterprises over said network,  
6 storing said information collected from said enterprise databases in a host  
7 database in communication with said host computer, and  
8 providing a host graphical user interface through which a shopper can view, over  
9 said network, said information stored in said host database.

1 2. The method according to claim 1, wherein collecting information from enterprise  
2 databases includes crawling HTML page trees.

1 3. The method according to claim 1, wherein collecting information from enterprise  
2 databases includes crawling XML page trees.

1 4. The method according to claim 1, wherein collecting information includes  
2 collecting publicly accessible information.

1 5. The method according to claim 1, wherein collecting information from enterprise  
2 databases includes collecting information from auction sites offering items for purchase  
3 over said network, and having associated auction databases.

1 6. The method according to claim 5, wherein collecting information from auction  
2 databases includes crawling HTML page trees.

1 7. The method according to claim 5, wherein collecting information from auction  
2 databases includes crawling XML page trees.

- 1 8. The method according to claim 5, wherein collecting information include  
2 collecting publicly accessible information.
- 1 9. The method according to claim 5, further comprising  
2 periodically collecting said information about said items from said enterprise  
3 databases, and  
4 updating said information stored in said host database.
- 1 10. The method according to claim 9, wherein updating said information stored in  
2 said host database comprises updating said information stored in said host database with  
3 sufficiently frequency to enable said shopper to monitor and participate effectively in  
4 bidding activity at said auction sites.
- 1 11. The method according to claim 5, further comprising,  
2 dynamically scheduling said collecting of information from said auction databases  
3 based upon content of previously collected information.
- 1 12. The method according to claim 5, further comprising,  
2 enabling said host computer to receive an auction watch request from said  
3 shopper,  
4 monitoring with said host computer a bidding activity at a specified auction site  
5 with regard to a specified item in response to said received auction watch request, and  
6 displaying said bidding activity to said shopper by way of said host graphical user  
7 interface.
- 1 13. The method according to claim 12, further comprising dynamically scheduling  
2 said collecting of information from said auction databases based upon content of  
3 previously collected information.
- 1 14. The method according to claim 12, further comprising,



2 enabling said host graphical user interface to accept from said shopper an update  
3 request, and  
4 updating at least a portion of said information stored in said host database  
5 substantially in real-time in response to said update requests.

1 15. The method according to claim 12, further comprising  
2 periodically collecting said information about said items from said enterprise  
3 databases, and  
4 updating said information stored in said host database.

1 16. The method according to claim 5, further comprising,  
2 enabling said host graphical user interface to accept from said shopper an update  
3 request, and  
4 updating at least a portion of said information stored in said host database  
5 substantially in real-time in response to said update requests.

1 17. The method according to claim 5, further comprising,  
2 enabling said host graphical user interface to accept from said shopper to enter an  
3 item watch request specifying a particular item for monitoring, and  
4 monitoring said auction sites to detect if said specified item becomes available for  
5 bidding at said auction sites in response to said item watch request from said shopper.

1 18. The method according to claim 17, further comprising,  
2 providing said shopper with notification in response to detecting said specified  
3 item becoming available for bidding, wherein said host computer provides said  
4 notification by way of a host computer-initiated mechanism different from a host  
5 graphical user interface.

1 19. The method according to claim 7, further comprising,  
2 enabling said host graphical user interface to accept from said shopper a market  
3 watch request specifying a class of items for monitoring, and

4 detecting availability of items within said class of items at said auction sites.

1 20. The method according to claim 19, further comprising distinguishing between  
2 newly detected ones of said items from previously detected ones of said items.

1 21. The method according to claim 19, further comprising  
2 providing said shopper with notification regarding detection of said items within  
3 said class of items, wherein said host computer provides said notification by way of a  
4 host computer-initiated mechanism different from a host graphical user interface.

1 22. The method according to claim 5, further comprising providing said shoppers  
2 with notification of host-based events by way of a host computer-initiated mechanism  
3 different from a host graphical user interface.

1 23. The method according to claim 22, wherein said host computer-initiated  
2 mechanism includes a communication mechanism chosen from electronic mail, Internet  
3 messaging, pager, facsimile, telephone, and Web telephone.

1 24. The method according to claim 22, wherein said host computer-initiated  
2 mechanism includes providing a hyperlink to said host graphical user interface.

1 25. The method according to claim 5, further comprising,  
2 enabling said host graphical user interface to accept from said shopper a host  
3 database query specifying a class of items,  
4 searching said host database for items within said class of items, and  
5 displaying auction information with regard to said items within said class of items  
6 to said shopper by way of said host graphical user interface.

1 26. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting  
3 from a shopper an indication of specific keywords to restrict said class of items.

1 27. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting  
3 from a shopper an indication of at least one category to restrict said class of items.

1 28. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting  
3 from a shopper an indication of a combination at least one keyword and at least one  
4 category to restrict said class of items.

1 29. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting  
3 from a shopper an indication of particular ones of said auction sites to restrict said class  
4 of items.

1 30. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting  
3 from a shopper an indication of a particular type of auction site in which said shopper is  
4 interested to restrict said class of items.

1 31. The method according to claim 30, wherein said particular type of auction site  
2 includes person-to-person auctions and business-to-person auctions.

1 32. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling said host  
3 computer and said host graphical user interface to accept from a shopper an indication of  
4 a time frame in which said host computer detects that an item within said class is  
5 available at one of said auction sites.

1 33. The method according to claim 25, wherein enabling said host graphical user  
2 interface to accept from said shopper a host database query includes enabling accepting

3 from a shopper an indication of at least one of a specific price and a price range for said  
4 class of items .

1 34. A method for aggregating auction information from a plurality of auction sites,  
2 comprising,  
3 interconnecting at least one host server site and ones of said plurality of auction  
4 sites by a network,  
5 providing at least one host database in communication with the host server,  
6 searching said ones of said plurality of auction sites across said network under the  
7 control of said host server,  
8 retrieving auction information from said auction sites,  
9 extracting data items from said auction information, said data items comprising  
10 information associated with items offered for purchase by said auction sites, and  
11 storing said data items within said host database.

1 35. The system of claim 34, wherein searching said ones of said plurality of auction sites  
2 across said network under the control of said host server comprises searching ones of  
3 said plurality of auction sites continuously on a periodic basis.

1 36. The method of claim 35 further comprising updating said host database with said data  
2 items retrieved and extracted from said auction information.

1 37. The system of claim 34, wherein storing said data items within said host database  
2 comprises sorting and arranging said data items according to a hierarchy of product and  
3 service categories established by said host server.

1 38. A method for searching for products or services offered for purchase by a  
2 plurality of auction sites, comprising  
3 interconnecting at least one host server site and ones of said plurality of auction  
4 sites by a network,  
5 providing at least one host database in communication with the host server,

6           searching said ones of said plurality of auction sites across said network under the  
7           control of said host server, by matching one or more keywords for said products or  
8           services, by one or more of said categories associated with said products or services, or  
9           both,  
10          retrieving auction information from said auction sites,  
11          extracting data items from said auction information, said data items comprising  
12          information corresponding to said products or services offered for purchase by said  
13          auction sites, and  
14          storing said data items within said host database.

1    39.    The method according to claim 38, wherein said information corresponding to  
2    said products or services comprises information chosen from one of a description of said  
3    product or service, a name of auction site, and a type of auction.

1    40.    The system according to claim 38, wherein storing said data items with said  
2    database comprises storing said data items with said database according to categories  
3    established by said host server.

1    41.    The system according to claim 40, wherein said categories established by said  
2    host server are chosen from one of a product or service type and a type of auction.

1    42.    The method according to claim 41, wherein said categories established by said  
2    host server include a hierarchy of product and service type categories and subcategories.

1    43.    The method according to claim 40, wherein searching by one or more keywords  
2    can be conducted within one or more of said categories.

1    44.    The method according to claim 40, wherein said search by categories can be  
2    conducted within a subset of data items identified by a search by one or more keywords.

1 45. A method for monitoring status of bids placed on one or more items at a plurality  
2 of auction sites in communication with a network, comprising,  
3 interconnecting at least one host server site and ones of said plurality of auction  
4 sites by a network,  
5 periodically gathering with said host server current bid information from said  
6 auction sites across said network for items in which a shopper has expressed interest, and  
7 providing with said host server to said shopper a current aggregated listing of said  
8 items, and said current bid information for said items.

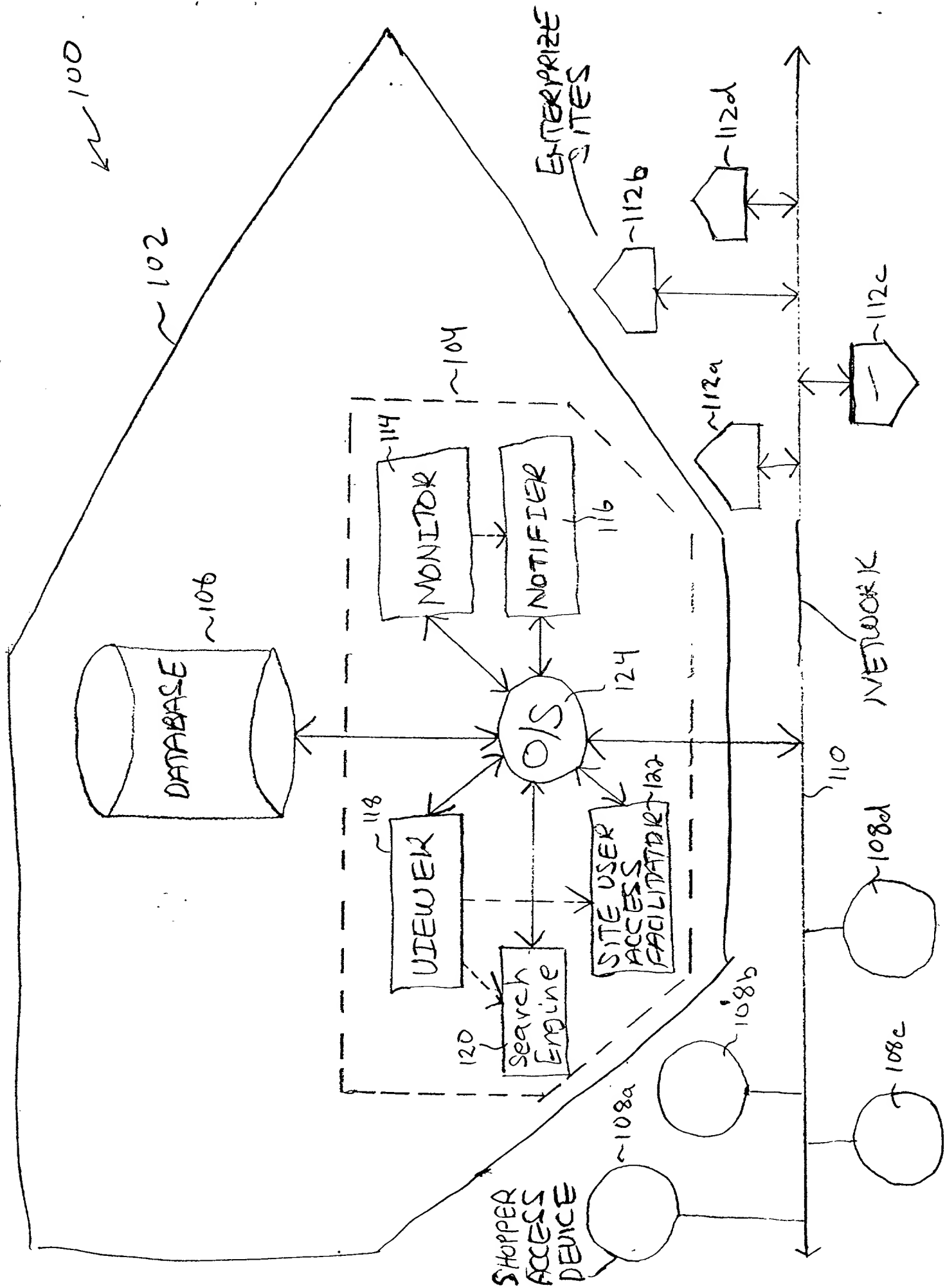
1 46. The method according to claim 45, further comprising,  
2 enabling said host computer to connect said shopper to auction sites where said  
3 shopper can place bids on said items, and  
4 providing an indication of whether said bids placed by said shopper on said items  
5 are winning or losing.

**A SYSTEM FOR AGGREGATING INFORMATION  
FROM ENTERPRISES OFFERING ITEMS FOR EXCHANGE  
OVER A COMMUNICATION NETWORK**

**Abstract of the Disclosure**

5           A network-based system for aggregating information from a plurality of  
enterprises offering items for exchange over a network. In one embodiment, the system  
includes a host computer and a host database. The host computer is in communication  
with the enterprises over the network, and is adapted for automatedly collecting and  
analyzing information about the items from enterprise databases associated with each of  
10 the enterprises. The host database is in communication with the host computer and is  
adapted for storing the information collected from the enterprise databases. The host  
computer is also adapted for providing a host graphical user interface through which a  
shopper can view, over the network, the information stored in the host database.  
According to one preferred embodiment, the plurality of enterprises includes auction sites  
15 offering items for purchase over the network.

100 →





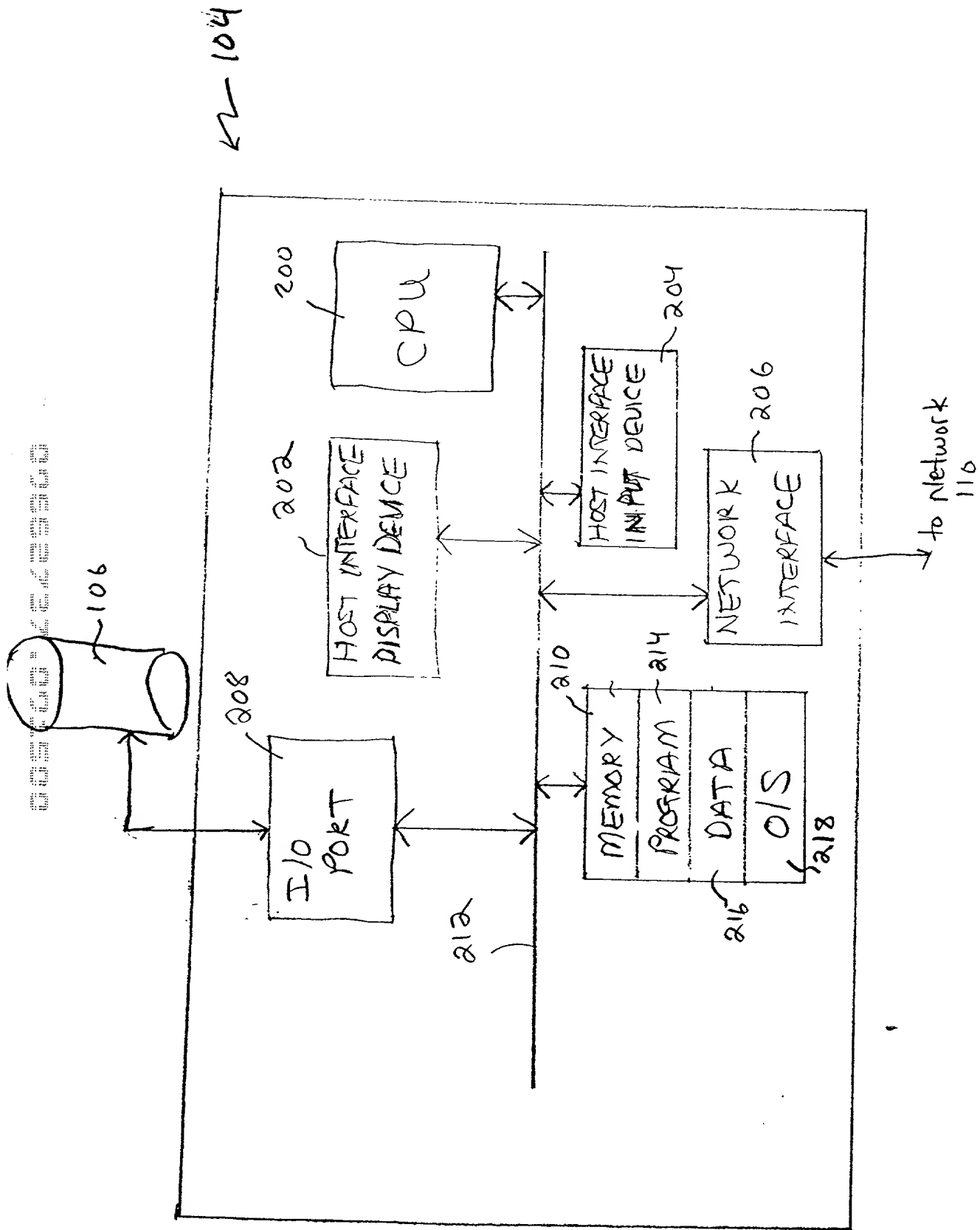


FIGURE 2

300  
↓

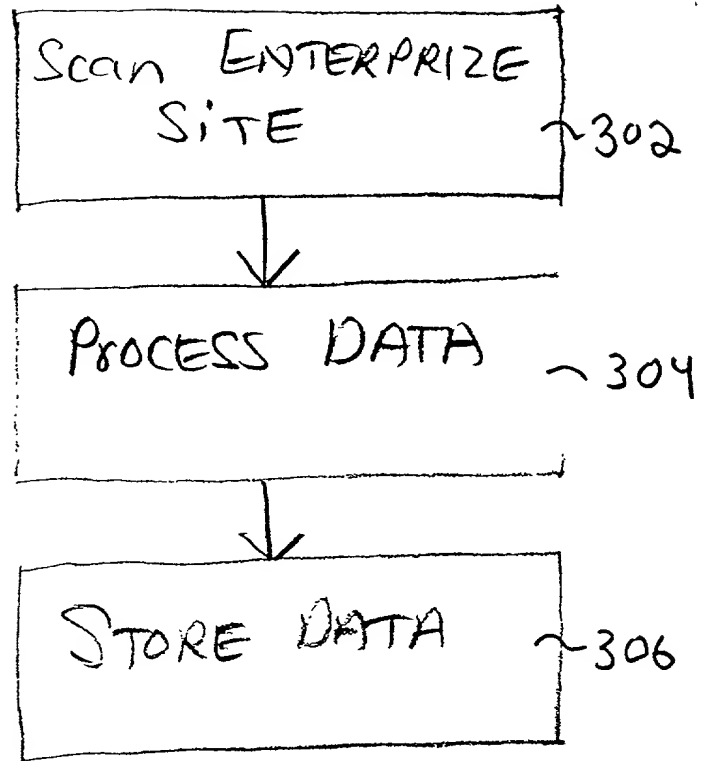
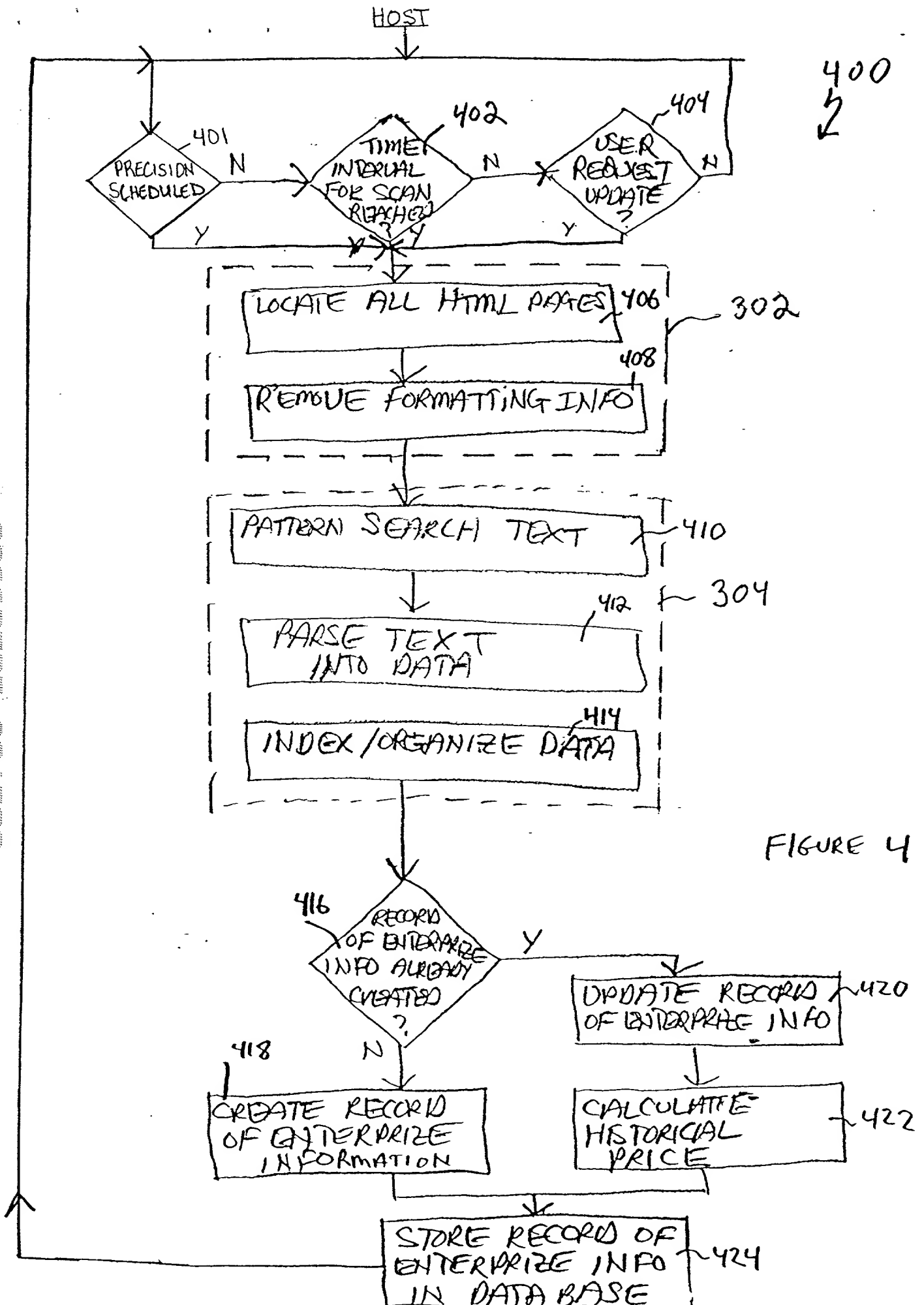


Figure 3



~500

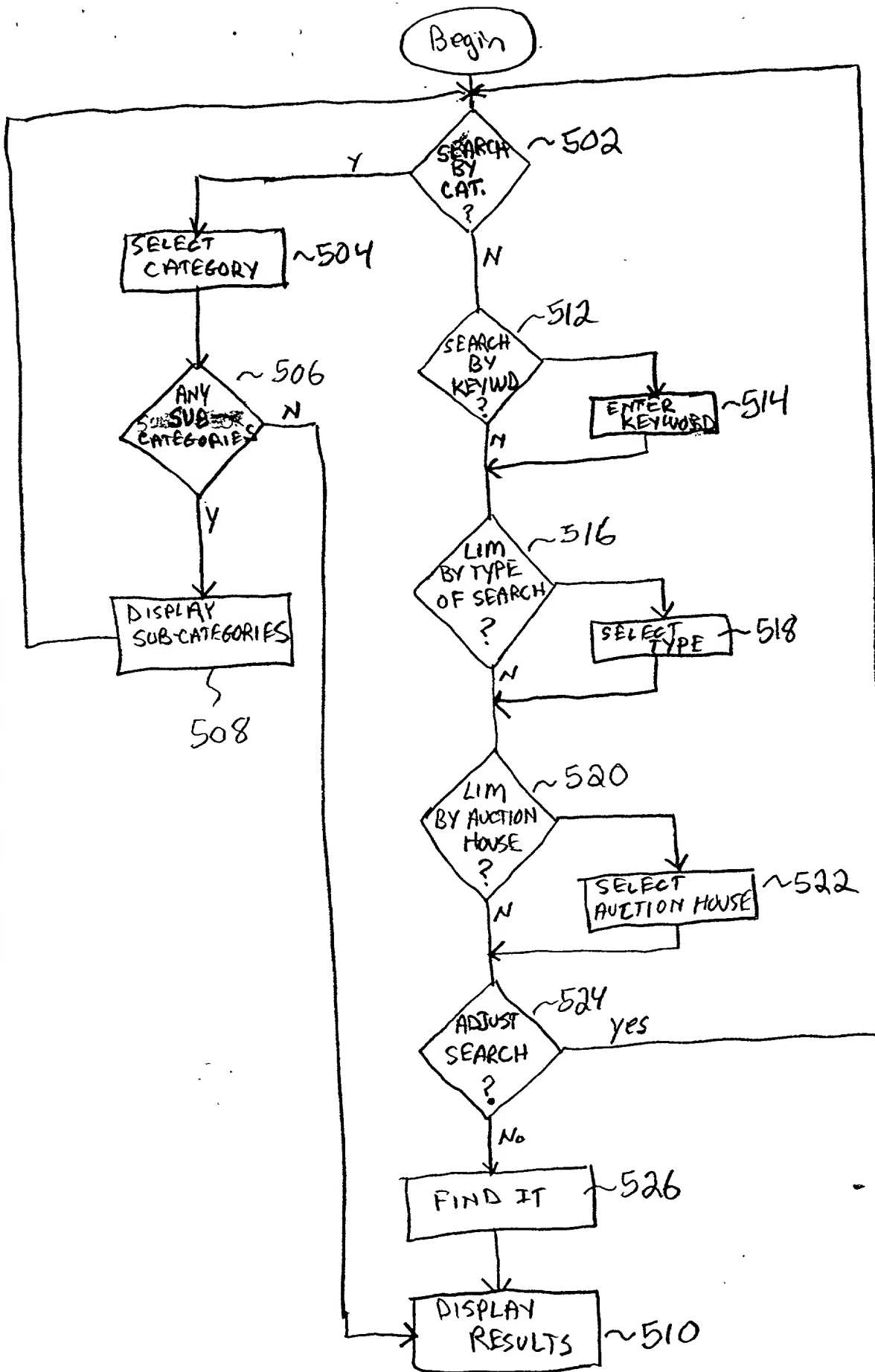


FIGURE 5A

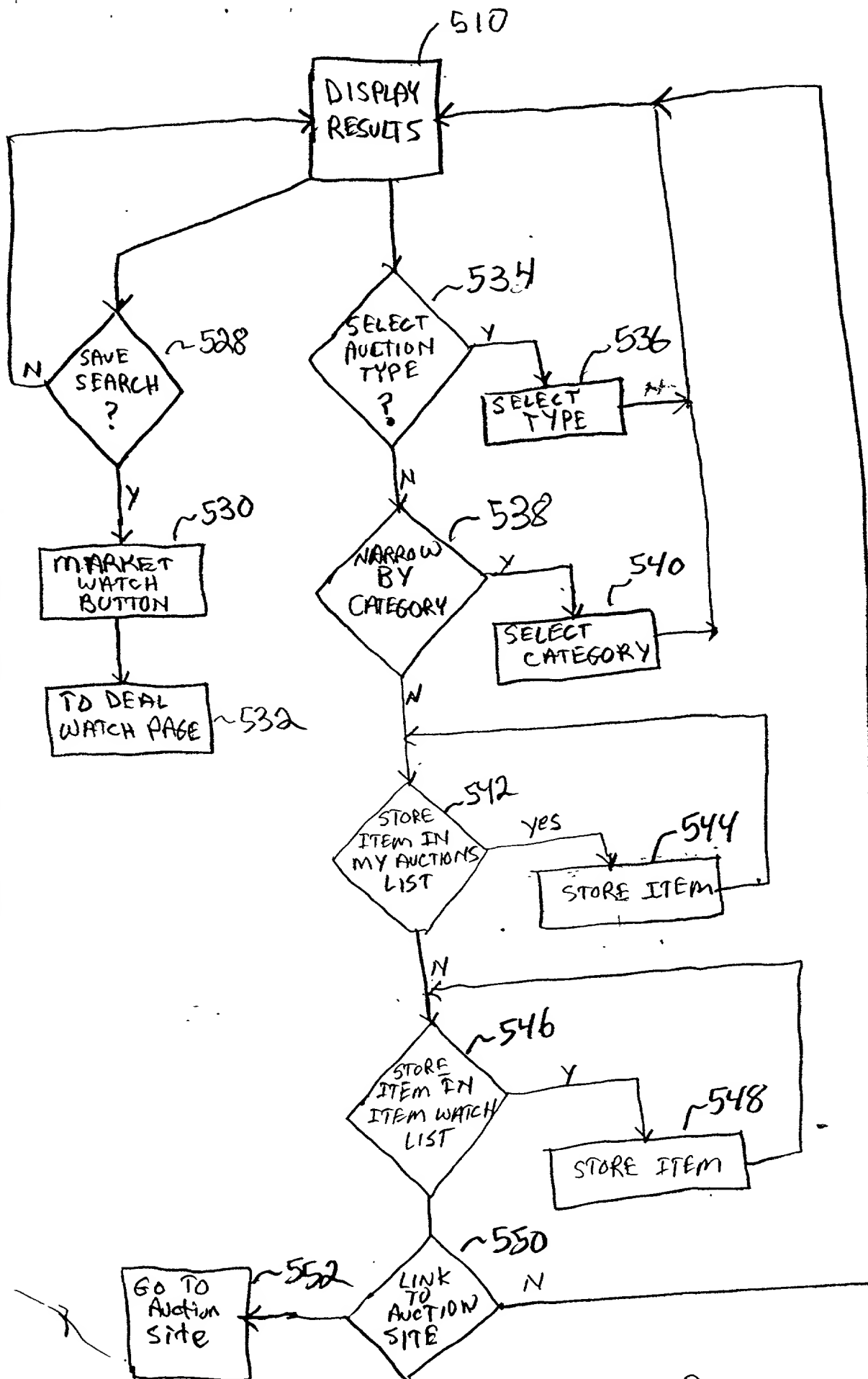


FIGURE 5B

## My Lists

### Deal Watch (2)

Gives you an early edge by alerting you when items come up for auction.

### My Auctions (0)

Saves you time by keeping price & status of your shopping list all in ONE PLACE, so you avoid going to each auction separately.

## Categories

[Antiques](#) (8,191)  
[Beanie Babies](#) (89,361)  
[Books & Magazines](#) (110,130)  
[Cars, Trucks, etc.](#) (7,193)  
[Coins & Stamps](#) (67,534)  
[Collectibles](#) (185,695)  
[Computers](#) (93,748)  
[Dolls & Figures](#) (32,700)  
[Electronics](#) (20,436)  
[Glass, Porcelain & Pottery](#) (51,682)  
[Home & Leisure](#) (80,995)  
[Jewelry](#) (63,111)  
[Memorabilia](#) (73,336)  
[Miscellaneous](#) (8,429)  
[Movies & Video Games](#) (41,043)  
[Music & Instruments](#) (52,747)  
[Sports](#) (20,074)  
[Sports Memorabilia](#) (247,673)  
[Toys](#) (90,683)  
[Travel](#) (7,297)

## What We Do

Bidder's Edge is a free service which allows you to search across **many** auction sites at once. We provide historical pricing to help you determine if you are getting a good deal, and allow you to monitor ongoing auctions and watch for items in upcoming auctions.

## Hot Auctions

### Football Season!

## Search

Find descriptions containing:

Narrow your search further: [Tips](#)


624



home | sign in | categories | my auctions | deal watch | personalize | help

604 606 608 610 612 614 616

You are here: Bidder's Edge > All Categories

Auctions for: "sony speakers" 

Search Results

Show ☒ Both Merchant and Person-To-Person Items

☐ Person-To-Person Items ONLY

☐ Merchant Items ONLY

Explain the difference between the Auction Types

Matching Categories





Click on a category to narrow your search.

Computers (5)  
Electronics (32)

Current Auctions


 = add to MyAuctions  = add to Item Watch

Electronics > Audio > Speakers

- |  | Approx. Bid | Close (EDT)     | Past Prices | Tools   |
|--|-------------|-----------------|-------------|---|
| • <u>Sony SRS-A15 3 Watt Powered Speaker System</u> @ Yahoo (Person-to-Person) | \$29.95     | 10/24, 04:32 AM | --          |   |
| • <u>Sony SRS-A15 3 Watt Powered Speaker System</u> @ Yahoo (Person-to-Person) | \$29.95     | 10/24, 04:32 AM | --          |   |

Search

Find descriptions containing:  Narrow your search further: [Tips](#)

Using  

At Auction  

home | sign in | my auctions™ | bid history™ | deal watch™ | personalize | help  
feedback | about bidder's edge | privacy policy | disclaimer

FIGURE 7



622 618  
Search All Auctions:  
[ ] [Find]  
home | sign out | categories | my auctions | deal watch | personalize | help  
604 606 608 610 612 614 616

You are here: Bidder's Edge > My Auctions

## My Lists

### Deal Watch (0)

Gives you an early edge by alerting you when items come up for auction.

### My Auctions (3)

You are here now.

## My Auctions ~ 802

Current as of Friday, October 22, 04:25 PM EDT

[-] = removes from My Auctions ~ 804

[+] = add to ItemWatch

Click here to change your timezone!

### ■ Sony SRS-A15 3 Watt Powered Speaker System@ Yahoo

2 left @ \$29.95

Closes Sun, Oct 24, 12:45 PM EDT ~ 808

No price history yet. You have not bid.

### ■ \*\*SONY AM/FM RADIO w/Speaker and Earphone\*\*@ Amazon

1 left @ \$6.50

Closes Sun, Oct 24, 5:34 PM EDT

No price history yet. Please click here to record your Amazon account info, so you can track your bids.

## HOT Auctions

### Football Season!

## Bid History

Past Auctions which you have monitored using "My Auctions".

### ■ High-Performance SONY Active Speaker System@ Deal Deal

3 left @ \$49.00

Closes Tue, Oct 26, 4:45 PM EDT

Avg. \$48.00 (2 sold @ \$39.00 to \$57.00)

Please click here to record your Deal account info, so you can track your bids.

## Categories ~ 626

[Antiques \(8,169\)](#)

[Beanie Babies \(92,394\)](#)

[Books & Magazines \(108,437\)](#)

[Cars, Trucks, etc. \(7,162\)](#)

[Coins & Stamps \(68,396\)](#)

[Collectibles \(185,272\)](#)

[Computers \(92,199\)](#)

[Dolls & Figures \(32,854\)](#)

[Electronics \(20,632\)](#)

[Glass, Porcelain &](#)

[Pottery \(51,046\)](#)

[Home & Leisure \(80,973\)](#)

[Jewelry \(63,869\)](#)

[Memorabilia \(72,993\)](#)

[Miscellaneous \(8,468\)](#)

[Movies & Video Games \(41,815\)](#)

[Music & Instruments \(53,269\)](#)

[Sports \(20,212\)](#)

[Sports Memorabilia \(246,176\)](#)

[Toys \(90,737\)](#)

## Search

Find descriptions containing:

Narrow your search further: [Tips](#)

[ ] [Find It]

Using [All of the words]

At Auction [All Auctions]

FIGURE 8





Search All Auctions:

home sign out categories my auctions deal watch personalize help

You are here: Bidder's Edge > Deal Watch

### Market Watch Added

The Market Watch specified has been successfully added.

### My Lists

#### Deal Watch (2)

You are here now.

#### My Auctions (3)

Saves you time by keeping price & status of your shopping list all in ONE PLACE, so you avoid going to each auction separately.

### HOT Auctions

#### Football Season!

#### Categories ~ 626

Antiques (8,201)  
Beanie Babies (93,235)  
Books & Magazines (109,630)  
Cars, Trucks, etc. (7,222)  
Coins & Stamps (69,341)  
Collectibles (186,052)  
Computers (93,604)  
Dolls & Figures (32,604)  
Electronics (20,848)  
Glass, Porcelain & Pottery (51,406)  
Home & Leisure (80,982)  
Jewelry (64,216)  
Memorabilia (73,627)  
Miscellaneous (8,427)  
Movies & Video Games (42,053)  
Music & Instruments (53,778)  
Sports (20,306)

### DealWatch

Get a daily report via email of ALL Auction offering items satisfying a search. This is called Market Watch<sup>SM</sup>

Get notified via email when a specific item will be up for a bid at a specific auction site. This is called Item Watch<sup>SM</sup>

#### Market Watch-1 searches watched

= removes a search from MarketWatch list

- Search **all auctions** in all categories for "sony speaker" (all words)

#### Item Watch-1 specific items being watched

= removes a search from ItemWatch list

- **\*\*SONY AM/FM RADIO w/Speaker and Earphone\*\***  
Amazon No price history yet.

### Search

Find descriptions containing:

Narrow your search further: Tips

Using

At Auction

Using

FIGURE 9

home | sign out | my auctions<sup>SM</sup> | bid history<sup>SM</sup> | deal watch<sup>SM</sup> | personalize | help  
feedback | about bidder's edge | privacy policy | disclaimer



Search All Auctions:

home sign out categories my auctions deal watch personalize help

You are here: Bidder's Edge > Personalize

## Personalization

### ✓ Personal Information Updated

Your personal information ( [First Name] [Last Name] [Email Address] ) has been updated.

You May Change Your Password

Bidder's Edge will *never* provide *any* of your personal information to anyone else without your *expl* authorization. Period. You can find out more in our privacy policy.

Your Login: newusr

Change your Password: (required)

Repeat Your Password: (required)

✓ Submit All

### Personal Information

Entering personal information will allow us to make your Bidder's Edge experience more personal. Press the "Submit All" button when you are done.

First Name New

Last Name User

☐ Send notifications to me via EMAIL at

rosenhrrs@tht.com

(Required for DealWatch Email notifications)

☐ Send notifications to my ICQ address at

(Required for DealWatch ICQ notifications - or pagers)

✓ Submit All

### Time Zone Specification

The TimeZone setting will allow you use the site in the time zone of your choice. Press the "Submit All" button when you are done.

Time Zone EDT - Eastern Daylight Time

✓ Submit All

FIGURE 10



622  
Search All Auctions:  618

home sign out categories my auctions deal watch personalize help

604 606 608 610 612 614 616

You are here: [Bidder's Edge](#) > [Categories](#)

## Categories

Send us [Feedback!](#)

Index ~ 1102

~ 1104

[Antiques](#) [Beanie Babies](#) [Books & Magazines](#) [Cars, Trucks, etc.](#) [Coins & Stamps](#)  
[Collectibles](#) [Computers](#) [Dolls & Figures](#) [Electronics](#) [Glass, Porcelain & Pottery](#)  
[Home & Leisure](#) [Jewelry](#) [Memorabilia](#) [Miscellaneous](#) [Movies & Video Games](#)  
[Music & Instruments](#) [Sports](#) [Sports Memorabilia](#) [Toys](#) [Travel](#) [Other](#)

FIGURE 11



622 618  
Search All Auctions:

home sign in categories my auctions deal watch personalize help

604 606 608 610 612 614 616

You are here: [Bidder's Edge](#) > [Sign In](#)

1200

☒ **Logged Out Successfully**

You are now logged out! Goodbye and please come back soon.

**Member Sign In** (New Users Click [Here](#) to register!)

Signing In will give you access to your My Auctions List and your DealWatch notification capabilities. Press the "Submit All" button when you are done.

Your Member Name  1202

Your Password  1204

☒ Save this information into the current Browser



1206

603

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[feedback](#) | [about bidder's edge](#) | [privacy policy](#) | [disclaimer](#)

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FIGURE 12